BEFORE THE
POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

IN THE MATTER OF INTALCO ALUMINUM CORPORATION, Appellant, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, Respondent.	PCHB No. 84-318 FINAL FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

This matter, the appeal of a Final Determination of Approval of a Notice of Construction and Prevention of Significant Deterioration (PSD) Permit/Order, came on for hearing before the Pollution Control Hearings Board; Gayle Rothrock (presiding), Lawrence J. Faulk and Wick Dufford on June 4 and 6, 1985, at Lacey, Washington. Respondent Department of Ecology (WDOE) elected a formal hearing. Lisa Flechtner and Marie Dillon, court reporters, officially reported the proceedings.

Appellant company was represented by Matthew Cohen, attorney at law. Respondent state agency was represented by Assistant Attorney

General Leslie Nellermoe.

Witnesses were sworn and testified. Exhibits were admitted and examined. Oral and written argument was received. From the testimony, evidence and contentions of the parties, the Board makes these

FINDINGS OF FACT

I

Intalco Aluminum Corporation (Intalco) owns and operates a primary aluminum reduction facility--the largest in the state of Washington--at Ferndale. Appellant's operations are subject to regulation through the state's Clean Air Act (chapter 70.94 RCW) and the Implementation Regulations for Air Contaminant Sources (WAC 173-403), and Regulations for Primary Aluminum Plants (WAC 173-415), of which we take judicial notice.

II

The Ferndale smelter pre-bakes its carbon anodes before they are placed in pots on the lines to be bathed in cryolite and charged with electricity to react with the cathode to create molten aluminum. This pre-baking requires that a small separate facility (a bake oven) be operated to prepare the anodes for actual use. The baking oven action gives off volatile organic compounds (VOCS), fluoride, and sulfur dioxide (SO_2). Airborne particulate and a calcium fluoride sludge is also produced. An electrostatic precipitator (wet scrubber) has been attached to the pre-bake facility since the early seventies to control the emission of air pollutants.

Desiring to update its pollution control equipment and eliminate the wet scrubber gumming up with contaminant tars and producing a sizeable steam plume, Intalco set about purchasing a dry scrubber system for the anode baking unit. Therein the rising gas stream of VOCS being driven off is passed through dry alumina ore in a cooling tower and thence through a baghouse. The residual is sent back to the plant for reclaiming of alumina. The dry scrubber appointed for this use costs $4.9 million and has capability for markedly decreasing fluoride and particulate emissions, but not SO_2 emissions. Such units also eliminate fluoride discharges to the water and half the creation of calcium fluoride sludge in achieving water pollution control for a particular facility.

III

The anode baking unit emissions are the source of two percent of the plant-wide total Ferndale smelter emissions.

IV

In early 1984, Intalco telephoned the Department of Ecology (DOE) to inquire how to apply for approval to replace the electrostatic precipitator at the bake oven facility with a new dry scrubber. The smelter officials were instructed to send in a Notice of Construction (of a new air contaminant source) and an Environmental Checklist for the proposed bake oven scrubber. The plant's technical manager disclosed in the February 6, 1984, letter accompanying the two forms that scrubbing efficiency would be greatly improved for tars, fluoride and particulate. Specifically, fluoride emissions to the air would

decrease by nearly 11 tons per year and particulate emissions would decrease by 93 tons per year. However, preliminary calculations indicated an increase in SO_2 emissions of 64 tons per year, or 1.2 percent over current emission levels plant-wide for this contaminant. The company asserted it was currently emitting, plant-wide, well below ambient limits for SO_2 and that the proposed change would not be detectable either by stack measurements or SO_2 monitoring equipment.

V

The subject dry scrubber is the best available control technology (BACT) in air pollution control for anode bake oven units at primary aluminum reduction smelters.

VI

Intalco uses petroleum coke and pitch to make the paste which constitutes the carbon anode. These raw materials contain a measure of sulfur. It takes nearly one-half ton of anode carbon to produce one ton of aluminum.

The critical variable affecting the emission of SO_2 from the aluminum reduction process is the percentage of sulfur in the coke.

In 1983, the average sulfur percentage in the coke used by Intalco was 2.44. However, in the intervening period, it has become apparent that such low sulfur coke will no longer be readily obtainable in the future. Intalco's two principal coke suppliers have been the nearby ARCO oil refinery and ALCAN in Edmonton, Alberta, a company in which Intalco has a substantial interest. Both of these sources have advised that the sulfur content in coke it can supply will rise. The

sulfur content of Alaska North Slope crude oil processed by ARCO has increased and the refinery will now not guarantee deliverable anode-grade coke as less than 2.9 percent sulfur. Similarly ALCAN, which has in the past supplied coke at 2.3-2.4 percent sulfur, now has a specification which sets a ceiling of 3.5 percent.

Intalco-Ferndale, compared with other aluminum industry plants, has been fortunate in the coke supplies available to it. The United States Environmental Protection Agency has concluded that, at present, the use of three percent sulfur coke represents what is economically available on the market. Even to achieve that percentage (considering the large volumes of coke required) aluminum reduction plants may be obliged to blend cokes from several suppliers.

Credible analysis projecting the trend in the market for coke shows that coke at below three percent sulfur is going to become more and more difficult to secure. There is a linear inverse relationship between sulfur content and price. The lower the percentage of sulfur, the greater the cost. Moreover, some of the low sulfur coke which <u>is</u> available has drawbacks because of the presence of vanadium and nickel which can substantially reduce the efficiency of the aluminum reduction process.

VII

Intalco asserts the choices on coke source purchases are not entirely within their control and yet raw materials purchases are key to control of air emissions. They further assert there is a trend in recent federal and state approvals to place the limit in the sulfur

content of coke at 3 percent for use in anodes in primary aluminum reduction plants. While federal and state orders also typically limit the amount of SO_2 emitted from all plant sources to anywhere between 45 and 60 pounds per ton of final product (on a monthly average) such limits are also reasonably mathematically related to 3 percent sulfur or greater, petroleum coke used as a raw material.

VIII

The Intalco plant is located in an area where the national ambient air quality standard for SO_2 is currently being attained. In fact, the air quality in the area is generally much better than the national standard. Under these circumstances, increases in emissions from the plant are subject to the complex PSD (Prevention of Significant Deterioration) rules which, generally, aim at preserving good air quality where it exists.

Because of the projected 64-ton-per-year increase in SO_2 emissions from the anode pre-bake facility, DOE notified Intalco that it would be required to provide a PSD analysis. For PSD purposes, the plant is located in a Class II area. This classification dictates the size of the SO_2 increment the plant may add to the ambient air above existing baseline concentrations.

Class I represents the most restrictive class and is in large part reserved for truly pristine areas such as large national ports and wilderness areas.

Intalco contracted with consultants R.W. Beck and Associates to do a PSD modeling analysis for the proposed bake oven scrubber. After

appropriate modeling and analysis, consultants concluded in a written report that all the SO_2 estimated concentrations were considerably below Significant Ambient Air Quality Impacts. This meant that the project would not even violate Class I increments and that, therefore, further analysis for PSD purposes was not required for this Class II area source.

IX

DOE published notice of the PSD and Notice of Construction applications. This notice contained no suggestion that DOE intended to impose a plant-wide SO_2 emissions level. Nonetheless in August of 1984, DOE issued Intalco a preliminary determination on both applications which contained as Condition 1, a provision of plant-wide applicability. Intalco objected, but its objections were not heeded, and on October 17, 1984, DOE issued a final order of approval of the applications, containing the following as Condition 1:

> Changes in plant operations which may result in plant-wide emissions of sulfur dioxide greater than 5,800 tons per year or 33,500 pounds per day shall require the approval of a Notice of Construction setting a new limit on sulfur dioxide emissions.
>
> In accordance with WAC 173-415-060(3) the Company shall inform the department of any potential increase in SO_2 emissions resulting from a change in raw materials or fuel or process operations which will result in SO_2 emissions greater than 5,800 tons per year or 33,500 pounds per day, based on a monthly average. The company shall submit a Notice of Construction with sufficient information to determine the effect of the proposed increase upon ambient concentrations of sulfur dioxide.

IX

At no point in the process did DOE solicit public comment on this

provision of its approval. Indeed, the condition took Intalco by surprise. The company did not think they were involved in obtaining a plant-wide regulatory order from DOE. The company was focusing solely on the pre-bake dry scrubber installation.

X

Earlier, in March of 1983, in connection with a revision of several regulations, DOE had advised the aluminum reduction plants in the state that it intended to issue a new regulatory order for each plant. The department then stated:

> The orders will include, but not be limited to:
>
> 1. Requirements for each emissions unit that are at least as stringent as requirements presently imposed on the emissions unit by the department or any local control agency.
>
> 2. Allowable emissions, expressed as weight of pollutant per unit of time, for each emission unit except fugitive emissions units.
>
> Allowable emission limits for each source will be based upon the regulatory limits for each emissions unit, the actual emissions, process and marketing limitations, and the impact upon air quality.

Following this statement the department set forth a "tentative list" of the emission units involved for each plant. For Intalco at Ferndale this listing included baghouses and roof vents for each potline, anode bake furnaces, casting furnaces and fugitive emissions.

On the basis of this communication, Intalco logically expected any plant-wide limits to be part of a separate comprehensive regulatory order process, and not involved in the approval of a modification to only anode bake furnace emissions.

XI

In selecting the 5,800 tons per year figure, DOE neither sought nor reviewed any information about the market availability of low sulfur coke. Instead the agency simply took the actual 1983 plant-wide SO_2 output (5,278 tons) added 64 more tons for the new pre-bake scrubber, tacked on an additional 500 tons and rounded down to 5,800. The additional 500 tons were derived from DOE's reading of WAC 173-415-060(3) which establishes a reporting requirement if a change in raw material or fuel will result in SO_2 increase above that amount.

DOE asserts that the 5,800-ton figure represents a RACT (Reasonably Available Control Technology) determination made as part of the program to impose "allowable emissions" levels on aluminum plants.

XII

An SO_2 emission ceiling for the entire Ferndale plant would have the effect of limiting both overall aluminum production and the sulfur content of the coke used in the reduction process.[1]

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1. Primary aluminum reduction plants using the pre-bake process emit far less SO_2 from their production facilities--the potlines--than do the so-called Soderberg plants. For pre-bake installations, hoods, ducting and baghouses are ordinarily the main pollution control system for potline emissions. Additional scrubbing facilities for SO_2 removal from such emissions is not generally either practical or required.

The 5,800 tons per year figure used by DOE in its approved order effectively limits the sulfur content in coke used to 2.69 percent at 1983 production levels. This translates to slightly over 40 pounds of SO_2 per ton of aluminum produced. [The generally applicable limitation now in effect in DOE's Primary Aluminum Plant Regulation is 60 pounds of SO_2 per ton of aluminum (monthly average). WAC • 173-415-030(8)(a).]

Accordingly, if the 5,800-ton figure is to be met, the company must either obtain coke of lower sulfur content than is expected to be readily available or curtail production. Production increases, within such a ceiling, would, as a practical matter, be impossible.

XIII

Intalco's Ferndale plant has a rated capacity of 280,000 tons of aluminum annually. The plant exceeded this production level in both 1983 and 1984 and hopes to do so in the future. The company envisions increasing production over time to as much as 320,000 tons per year.

DOE testimony was that the purpose in including Condition 1 in the order under appeal (PSD-2, Final Determination of Approval of Notice of Construction and of PSD Application) was to subject production increases resulting in plant-wide emissions of SO_2 above 5,800 tons per year to the Notice of Construction (new source review) process.

DOE's administrative interpretation of its own regulations is that the Notice of Construction requirements do not automatically apply to new emissions resulting from production increases. The agency believes such requirements apply only when such increases are

prohibited by regulatory order. The agency also believes, apparently, that an order is needed to subject SO_2 increases from changes in the sulfur content of coke to the Notice of Construction process.

XIV

From Condition No. 1 of "Approval Conditions" of PSD-2, recited above, Intalco appealed to the Board on November 21, 1984. The case was reviewed again by the parties and, ultimately, a pre-hearing conference was convened on May 20, 1985. An early hearing date was arranged and trial briefs were invited, and subsequently received.

XIV

Any Conclusion of Law which is deemed a Finding of Fact is hereby adopted as such.

From these Findings, the Board comes to these

CONCLUSIONS OF LAW

I

The Board has jurisdiction over these persons and these matters. Chapters 70.94 and 43.21B RCW.

II

The Washington State Clean Air Act declares that it is the:

> public policy of the state to secure and maintain such levels of air quality as will protect human health and safety and comply with the requirements of the federal clean air act, and, to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of its inhabitants, promote the economic and social development of the state, and facilitate the enjoyment of the natural attractions of the state. RCW 70.94.011.

To implement this expression of public policy, DOE has adopted a comprehensive scheme of regulation which includes ambient air quality standards, generally applicable emission standards, and the imposition of technology requirements on a case-by-case basis. SO_2 is the subject of both ambient air and emissions standards set by the state.

III

DOE directly regulates primary aluminum reduction plants by the terms of chapters 173-415 and 173-403 WAC.

Under WAC 173-415-050 construction by an aluminum plant of a "new source" shall not commence until a Notice of Construction has been approved by the Department. This process is commonly called new source review.

WAC 173-403-030(33) defines "new source" to include

> [a]ddition to, enlargement, modification, replacement, or any alteration of any process or source which may increase emissions or ambient air concentrations of any contaminant for which federal or state ambient or emission standards have been established.... In addition every major modification shall be construed as construction, installation or establishment of a new source.

However, WAC 173-403-030(28)(v) excludes from the definition of "major modification" an emissions increase resulting from

> an increase in the hours of operation or the production rate unless such increases are prohibited by regulatory order.

The term "source" includes all emission units in a single production facility, WAC 173-403-030(47); whereas an "emission unit" means any particular "equipment, device, process or activity" that

produces or may produce emissions within a "source." WAC 173-403-030(20).

IV

Consistent with the total definitional scheme, the physical modification of any emission unit so as to increase emissions is the construction of a "new source" for purposes of the notice of construction requirement. But the process is explicitly governed by WAC 173-403-050 which states in subsection (1)(c):

> The notice of construction and new source review shall apply only to the emission unit(s) affected and the contaminants involved.

Therefore, following the Notice of Construction process was completely proper in relation to the new dry scrubber installation for the anode baking unit. But, the imposition of a plant-wide SO_2 condition in the same approval was not proper as a part of the anode bakeoven new source review procedure because it covers far more than the "emission unit(s) affected."

V

DOE, however, views the imposition of the plant-wide Condition 1 as in addition to, rather than as a part of, the anode bake oven Notice of Construction process. There is no reason why more than one kind of order cannot be included in the same document.

However, it is essential for the validity of any particular type of order that the correct procedure be followed in relation to it.

VI

We concur with DOE's administrative interpretation of its own rules that Notice of Construction procedures do not apply to SO_2 increases resulting from greater production, unless so required by regulatory order. The regulations are not felicitously drafted, but this conclusion is the logical result of reading the definitions of "new source" and "major modification" together. WAC 173-403-030(33) and WAC 173-403-030(28) (quoted above).

Moreover, we concur in DOE's apparent position that changes in raw materials or fuel which result in SO_2 increases do not automatically trigger the Notice of Construction requirements. WAC 173-405-060(3) merely requires that if changes in raw material or fuel result in SO_2 increases of over 500 tons per year, information about the increase must be submitted to DOE for the agency's evaluation. This is not the same thing as subjecting raw material or fuel changes to the Notice of Construction requirement.

Therefore, we conclude that Condition 1, in the order under review is more than a mere admonition regarding what is already required. It subjects the entire plant's operation to a requirement to secure permission to exceed the ceiling set. Where either production increases or changes in raw materials or fuel would cause the exceedance, this is the imposition of a regulatory limitation not otherwise applicable.

Accordingly, Condition 1 is an order which limits emissions, fitting the definition of "regulatory order." WAC 173-403-030(44).

VII

The means selected for imposing this regulatory limitation was a purported determination of RACT (reasonably available control technology) related to the establishment of an allowable emissions rate for the source as a whole. See WAC 173-403-030(5)(c).[2]

Such a determination is subject to procedural requirements set forth in WAC 173-403-110. Public notice is explicitly required for an order to determine RACT. Subsection (1)(c). The notice provides a specified public comment period, and under subsection (3)

> No final decision on any application or action of any of the types described in subsection (1) of this section shall be made until the public comment period has ended and any comments received have been considered.

The notice also advises that any interested group or person may request a public hearing. Subsections (2), (4). If such a hearing is held, the information received there must also be considered prior to a decision.

As to the RACT determination embodied in Condition 1, the procedural requirements of WAC 173-403-110 were simply not met.

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2. RACT is a retrofit standard applicable only to existing sources in non-attainment areas for federal law purposes. However, DOE as a matter of state rule applies this technology formula to existing primary aluminum plants regardless of location. WAC 173-415-030. Intalco's location in an SO_2 attainment area is, thus, irrelevant to the applicability of RACT for state law purposes.

VIII

DOE is bound by its own rules. The failure to comply with self-mandated procedures in imposing Condition 1 is not an error which can be viewed as harmless. Use of the public notice process might well have eliminated the instant appeal. At the least, it would have developed the information base on the availability of low sulfur coke which was made known to DOE apparently for the first time at the hearing before this Board.

DOE's determination rested heavily on the assumption that actual emissions can be the basis of RACT and that when additional controls are not being required no elaborate analysis is necessary. However, even if true, this would not change the required procedures. The definition of RACT itself (WAC 173-403-030(43)) states

> RACT requirements for any source or source category may be adopted as an order or regulation after public involvement per WAC 173-403-110.

Moreover, the analysis mandated by this very same definition includes a consideration of "technical and economic feasibility." If actual emissions are likely to change for the worse because obtaining the kind of fuel or raw materials used in the past is no longer economically feasible, this information should be considered in determining RACT.

IX

In sum, we decide that Condition 1 was not properly adopted as a procedural matter and should, because of that, be stricken from the approval order.

In so deciding we do not reach the merits of 5,800 tons per year or any other plant-wide SO_2 limitation which DOE might impose after following proper procedures and considering all information thereby elicited.

X

Intalco has attempted to raise an additional question as to whether a PSD approval was required in this case. Since PSD approval was given, we do not perceive how such an issue can give rise to an actual controversy for the purposes of a contested case.

In any event, we conclude that the company's argument on this point is without merit. The assertion is that only the new or incremental emissions should be considered in determining whether a source is subject to PSD review. No citation of authority is offered for this proposition and we have found none either in DOE's regulations or the federal PSD regulations incorporated by reference in the state agency's rules. WAC 173-403-080; 42 CFR 52.21.

XI

Any Finding of Fact which is deemed a Conclusion of Law is hereby adopted as such.

From these Conclusions the Board enters this

ORDER

The Notice of Construction Approval and PSD-2 Permit issued by Department of Ecology to Intalco on October 17, 1984, is affirmed; provided that Condition No. 1 is stricken.

DONE this 30th day of August, 1985.

POLLUTION CONTROL HEARINGS BOARD

Gayle Rothrock
GAYLE ROTHROCK, Vice Chairman

Wick Dufford
WICK DUFFORD, Lawyer Member

(See Concurring Opinion)
LAWRENCE J. FAULK, Chairman

CONCURRING OPINION - LAWRENCE J. FAULK

I concur in the result reached by the majority but write separately to emphasize a point.

It seems to me that DOE should understand the impact of their decisions. In my view, it was clear they did not understand the effect of their decision on this particular company.

Approval condition, paragraph 1, reads;

> Changes in plant operations which may result in plant-wide emissions of sulfur dioxide greater than 5,800 tons per year or 33,500 pounds per day shall require the approval of a Notice of Construction setting a new limit on sulfur dioxide emissions.
>
> In accordance with WAC 173-415-060(3) the Company shall inform the department of any potential increase in SO_2 resulting from a change in raw materials or fuel or process operations which will result in SO_2 emissions greater than 5,800 tons per year or 33,500 pounds per day, based on a monthly average. The Company shall submit a Notice of Construction with sufficient information to determine the effect of the proposed increase upon ambient concentrations of sulfur dioxide.

The impact of this condition is to impose a restriction on the company that was not possible to achieve. This is because this condition results in a sulfur content in the petroleum coke of 2.692 percent. Expert testimony proved that petroleum coke with 2.692 percent sulfur content is not available.

The Department should have realized this when they imposed condition number 1 on appellant. In order to understand the significance of approval condition 1, the following formula must be understood:

Case: 50 Lb SO2/Ton Aluminum

To estimate what percent sulfur in the petroleum coke would increase SO_2 emissions to 50 pounds SO_2 per ton aluminum produced, rearrange formula (2) and solve for tons SO_2/year. Then substitute the tons SO_2/year in formula (1), rearrange it, and solve for percent sulfur in the coke. The 1983 data is again used in the example below:

Substitute into equation (2):

$$50 \text{ Lb } SO_2/\text{Ton Al} = \frac{(\text{Tons SO2})\ (2000)}{(287876)}$$

Rearrange (2) and solve:

$$\text{Tons } SO_2 = \frac{(50)(287876)}{(2000)} = 7197 \text{ Tons } SO_2/\text{Year}$$

Substitute result from (2) into equation (1):

$$7197 \text{ Tons } SO_2 = (103703)\left(\frac{\%S \text{ in Coke}}{100}\right)(2) + (25392)\left(\frac{.425}{100}\right)(2)$$

Rearrange (1) and solve in two steps:

$$7197 = (2074)(\%S \text{ in Coke}) + 216$$

$$\%S \text{ in Coke} = \frac{7197 - 216}{2074} = 3.37 \%S \text{ in Coke}$$

Thus, 50 pounds SO_2 emission per ton aluminum produced would be reached with 3.37 percent sulfur in the petroleum coke provided all other operating variables except aluminum production remained the same as in 1983.

Case: 5800 Tons/Year SO2

To estimate what percent sulfur in the petroleum coke would result in SO_2 emissions of 5800 tons per year, substitute the 5800 tons into equation (1):

$$5800 \text{ Tons } SO_2/\text{Year} = (103703)\left(\frac{\%S \text{ in Coke}}{100}\right)(2) + (25392)\left(\frac{.425}{100}\right)(2)$$

$$= (2074)(\%S \text{ in Coke}) + 216$$

Rearrange and solve:

$$\%S \text{ in Coke} = \frac{5800 - 216}{2074}$$

$$= 2.692 \%S$$

CONCURRING - FAULK
PCHB No. 84-318

I would hope that when the Department makes these kinds of decisions in the future, they would calculate this formula and take the result it achieves into consideration.

DONE this 30th day of August, 1985.

8/28/85

LAWRENCE J. FAULK, Chairman